

REMARKS

The examiner has objected to the drawings under 37 C.F.R. § 1.83(a) on the grounds that "...they fail to show the wire 54 bonded to the Au of the Ni/Au layer 48/50 as described in the specification (page 6)." This objection is not understood. As stated on page 6, lines 8-12

The gold bond is comprised of the gold ball 52 which is formed by heating the gold wire 54 as is commonly practiced in the art. The bonding is preferably done by ultrasonic techniques, pressing the wire 54 and the ball 52 into the bond pad. *This results in a strong, electrically efficient bond of the wire 54 to the Au of the Ni/Au layer 48 as shown in Figures 9 and 10.* (emphasis supplied)

Thus, it seems clear that the drawings (Figures 8-10) clearly show what is described in the specification. If the examiner continues this rejection, the undersigned attorney respectfully requests more guidance as to the nature of the rejection.

With respect to the references cited on page 5 of the application, these are merely cited to show that the technique is well known in the art. No claims are made to any technique *per se* so these are not needed in the IDS.

Applicants hereby affirm the telephone election made in this application, namely applicants elect claims 11-17, and this election is made without traverse.

The examiner has objected to claims 11-17 on several grounds. The examiner's suggestions have been adopted, but it is not believed that the objections are well founded. However, these amendments are not intended to change the scope of the claims.

Claims 11-17 have been rejected under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Patent 6,706,622 to McCormick, hereinafter McCormick, in view of U.S. Patent 6,649,507 to Chen et al, hereinafter Chen et al. This rejection is not thought to be well taken, especially in view of the amendment to claim 11, the only independent claim now in the application, and upon which claims 12-17 depend, either directly or indirectly.

First it should be noted that the present invention relates to a structure that is capable of having, and in the case of claims 18 and 19 has, a wire bond thereon. Neither of the references teaches nor suggests a wire bond structure, nor could they be used as a wire bond structure. Most importantly, in the case of both references applied by the examiner, edges of the copper seed layer are exposed. If not passivated, these exposed edges will corrode, thus interfering with the function of the chip. Also, passivation adds to the cost of the chip. Moreover, passivation conventionally utilizes heat, and where the seed layer includes a dual layer of Ni/Au, the heat for passivation would cause the nickel to diffuse into the gold and thus render it too hard for wire bonding. In any event, there is no suggestion for covering the edges of the seed layer with a dual overlying layer.

Claim 11, as amended, the only independent claim presently in the application, specifically requires a conductive seed layer disposed in an opening in a dielectric material and overlying a bond pad in contact with the entire surface of the opening and having at least one exposed edge. At least one layer of conductive material overlies the conductive seed layer completely enclosing it, including any exposed edge. This clearly is not taught nor suggested by either McCormick or Chen et al or any reasonable combination thereof. In McCormick, the edges of the seed layer are exposed, not covered and, as indicated above, if not passivated, will lead to potential failure of the chip due to corrosion. The method by Chen et al results in a reflowed solder ball seemingly encapsulating the side wall of UBM metal which may be a copper seed. However, solder metal cannot be used for wire bond applications. Furthermore, if the UBM contains plated gold and nickel, as described by Chen et al, it is not possible to "reflow" gold and nickel in a heating process to create an encapsulating structure around a copper seed.

It is not enough that one may modify a reference in view of a second reference, but rather it is required that the second reference suggest modification of the first reference and not merely provide the capability of modifying the first reference.

The CAFC stated In re Piasecki, 745 F.2d 1468, 223 USPQ 785, 788 (Fed. Cir. 1984) the following:

"The Supreme Court in Graham v. John Deere Co., 383 U.S. 1 (1966), focused on the procedural and evidentiary processes in reaching a conclusion under Section 103. As adapted to ex parte procedure, Graham is interpreted as continuing to place the "burden of proof on the Patent Office which requires it to produce the factual basis for its rejection of an application under sections 102 and 103". Citing In re Warner, 379 F.2d 1011, 1020, 154 USPQ 173, 177 (CCPA 1967)."

The law is quite clear that in order for a claimed invention to be rejected on obviousness, the prior art must suggest the modifications sought to be patented; In re Gordon, 221 U.S.P.Q. 1125, 1127 (CAFC 1984); ACS Hospital System, Inc. v. Montefiore Hospital, 221 U.S.P.Q. 929, 933 (CAFC 1984). The foregoing principle of law has been followed in Aqua-Aerobic Systems, Inc. v. Richards of Rockford, Inc., 1 U.S.P.Q. 2d, 1945 (D.C. Illinois 1986). In the Aqua-Aerobic's case, the Court stated that the fact that a prior reference can be modified to show the claimed invention does not make the modification obvious unless the prior reference suggests the desirability of the modification. The CAFC in the case of In re Gorman, 18 U.S.P.Q. 2d (CAFC 1991) held at page 1888:

"When it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the applicant [citation]. 'Obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination [citations]. . .

The references themselves must provide some teaching whereby the applicant's combination would have been obvious."

Further, the CAFC, in In re Oetiker, 24 U.S.P.Q. 2nd 1443, 1445 (CAFC 1992) held:

There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself.

Most significantly, the CAFC in the recent case of In re Dembiczak, 50 U.S.P.Q.2nd 1614 (CAFC 1999) held at 1617:

...(examiner can satisfy burden of obviousness in light of combination 'only by showing some objective teaching [leading to the combination]');

Thus, it is clear that where an individual reference does not teach the entire invention, then the modification which the invention represents must be suggested and motivated by some other reference through some objective teaching and cannot come from the application itself, which is not the case here. Therefore, claim 11 is clearly allowable over any reasonable combination of McCormick or Chen et al.

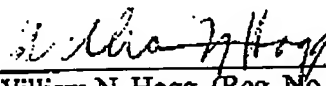
Claims 12-13, 15-17 and newly added claims 18 and 19 are dependent, directly or indirectly, on claim 11 and, for the same reasons, are believed allowable. Moreover, claim 18, which is dependent upon claim 11, requires that the conductive material define a well in the I/C chip in which a ball bond is disposed. This is not taught nor suggested by either McCormick or Chen et al or any reasonable combination thereof and, for this additional reason, claim 18 is believed to be allowable. Claim 19 is dependent upon claim 18 and requires that the ball bond is Au. Again, this is not taught nor suggested by either McCormick or Chen et al or any reasonable combination thereof and, for this additional reason, claim 19 is believed to be allowable.

In view of the above, it is believed that each of the claims now in the application is distinguishable one from the other and over the prior art.

Therefore, reconsideration and allowance of the claims is respectfully requested.

Respectfully submitted,

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